

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections contained in the Office Action of May 22, 2008 is respectfully requested.

By this Amendment, claims 82, 92 and 94 have been cancelled. Thus, claims 63-81, 83-91 and 93 are currently pending in the application. No new matter has been added by these amendments.

Revisions have been made to the specification as indicated above. No new matter has been added by the revisions. Entry of the amendments to the specification is thus respectfully requested.

On pages 2-3 of the Office Action, the Examiner rejected claims 82, 92 and 94 under 35 U.S.C. § 112, first paragraph, as not being enabled by the original specification. However, as indicated above, claims 82, 92 and 94 have been cancelled. Accordingly, in view of the cancellation of claims 82, 92 and 94, it is respectfully submitted that the rejection under § 112, first paragraph, is rendered moot.

On pages 3-4 of the Office Action, the Examiner rejected claims 82 and 94 under 35 U.S.C. § 112, second paragraph, as being indefinite. However, as indicated above, claims 82 and 94 have been cancelled. Accordingly, in view of the cancellation of claims 82 and 94, it is respectfully submitted that the rejection under § 112, first paragraph, is rendered moot.

On page 4 of the Office Action, the Examiner objected to the specification as containing and informality. In particular, the Examiner required that the specification be amended to include the heading "Summary of the Invention." As indicated above, the specification has been amended to include the heading required by the Examiner. Accordingly, it is respectfully submitted that the Examiner's objection is not applicable to the amended specification.

On pages 4-13 of the Office Action, the Examiner rejected claims 63-94 under 35 U.S.C. § 103(a) as being unpatentable over de Nora et al. (US 6,540,887) (hereinafter de Nora '887) in view of de Nora (US 6,093,304) (hereinafter de Nora '304), de Nora et al. (US 6,656,340) (hereinafter de Nora '340) and Julsrud et al (US 2004/0178079). For the reasons discussed below, it is respectfully submitted that the present claims are clearly patentable over the prior art

of record.

Independent claim 63 recites a method for electrolytic production of aluminum metal from an electrolyte including aluminum oxide. The method of claim 63 includes performing electrolysis in an electrowinning cell comprising at least one inert anode and at least one cathode, the at least one anode and the at least one cathode being arranged so as to face each other, wherein the at least one anode evolves oxygen gas and aluminum is discharged onto the at least one cathode during the electrolysis, with the at least one cathode being substantially horizontal. The method of claim 63 also comprises *directing the oxygen gas to flow into grooves in an electroactive surface of the at least one anode* so as to be drained away from an interpolar room, and so as to establish and enforce an electrolyte flow pattern between the at least one cathode and the at least one anode and over the at least one anode, wherein *the grooves of the at least one anode define a plurality of anode teeth, each of the anode teeth having a V-shaped bottom surface which slopes from a center line of a respective anode tooth toward an adjacent groove, and wherein the grooves are sloped in a longitudinal direction of the grooves and away from the at least one cathode.*

Independent claim 68 recites an electrowinning cell for electrolytic production of aluminum metal from an electrolyte including aluminum oxide. The cell of claim 68 includes at least one inert anode and at least one cathode, the at least one anode and the at least one anode being arranged so as to face each other, with the at least one cathode being substantially horizontal, wherein the anode is configured to evolve oxygen gas during an electrolysis process in which aluminum is discharged onto the at least one cathode such that the oxygen gas enforces an electrolyte flow pattern, and wherein the electrolyte flow pattern is to be established between the at least one cathode and the at least one anode and over the at least one anode. Claim 68 further recites *grooves arranged in an electroactive surface of the at least one anode* so as to drain away oxygen from an interpolar room, wherein *the grooves of the at least one anode define a plurality of anode teeth, each of the anode teeth having a V-shaped bottom surface which slopes from a center line of a respective anode tooth toward an adjacent groove, and wherein the grooves are sloped in a longitudinal direction of the grooves and away from the at least one*

cathode.

The de Nora '887 reference discloses aluminum electrowinning cells which, as shown in Fig. 1a, includes an anodes 15 having electrochemically active lower surfaces 16. de Nora '887 also discloses that the anodes 15 are laterally spaced apart by inter-member gaps 17.

As an initial matter, it is noted that on page 8 of the Office Action, the Examiner acknowledges that de Nora '887 does not disclose all of the features of independent claims 63 and 68. In particular, the Examiner indicates that de Nora '887 does not disclose a plurality of anode teeth in which each of the anode teeth has a V-shaped bottom surface which slopes from a center line of a respective anode tooth toward an adjacent groove.

Further, the Examiner also appears to indicate that de Nora '887 does not disclose that the bottom surface of each anode tooth is sloped in a longitudinal direction of the grooves and away from the at least one cathode. However, it is noted that independent claims 63 and 68 recite that the grooves are sloped in a longitudinal direction of the grooves and away from the at least one cathode, and do not recite that the bottom surface of each anode tooth is sloped in a longitudinal direction of the grooves and away from the at least one cathode, as the Examiner appears to suggest.

Nonetheless, it is respectfully submitted that de Nora '887 does not disclose or suggest grooves which are sloped in a longitudinal direction of the grooves and away from the at least one cathode, as required by independent claims 63 and 68.

The de Nora' 304 reference discloses a cell which includes anodes 15 suspended so as to be opposed to channeled cathode blocks 10. However, de Nora' 304 does not disclose grooves in the anode which define a plurality of anode teeth, with the grooves being sloped in a longitudinal direction of the grooves and away from the at least one cathode, as required by independent claims 63 and 68.

The de Nora '340 reference discloses a cell in which the anodes 10 include inclined plates 16 which face corresponding inclined cathode surfaces 35, as shown in Fig. 3. However, de Nora '340 does not disclose or suggest that the anode 10 includes a plurality of anode teeth defined by grooves which are sloped in a longitudinal direction of the grooves and away from the at least

one cathode, as required by independent claims 63 and 68.

Julstrup discloses various surface designs for an anode of an electrolysis cell. In particular, Julstrup discloses anodes having protruding elements of various shapes. However, Julstrup does not disclose or suggest an anode which includes a plurality of anode teeth defined by grooves which are sloped in a longitudinal direction of the grooves and away from the at least one cathode, as required by independent claims 63 and 68.

However, on pages 11-12 of the Office Action, the Examiner asserts that it would have been obvious to one of ordinary skill in the art to modify de Nora '887 in view of de Nora '304, de Nora '340 and Julstrup in order to arrive at the claimed invention, in part, because Julstrup discloses "the use of grooves and V-shaped and U-shaped anodes," and because "Table 1 of Julstrup et al appears to meet the requirements of the groove dimensions" set forth in the claims. However, Julstrup does not disclose or suggest grooves which are sloped in a longitudinal direction of the grooves and away from the at least one cathode, as required by independent claims 63 and 68.

Accordingly, as none of the de Nora '887, de Nora '304, de Nora '340 and Julstrup references discloses or suggests a plurality of anode teeth defined by grooves which are sloped in a longitudinal direction of the grooves and away from the at least one cathode, as required by independent claims 63 and 68, the combination of the de Nora '887, de Nora '304, de Nora '340 and Julstrup references does not disclose or suggest a plurality of anode teeth defined by grooves which are sloped in a longitudinal direction of the grooves and away from the at least one cathode.

Therefore, for the reasons presented above, it is believed apparent that the present invention as recited in independent claims 63 and 68 is not disclosed or suggested by the de Nora '887 reference, the de Nora '304 reference, the de Nora '340 reference and the Julstrup reference taken either individually or in combination. Accordingly, a person having ordinary skill in the art would clearly not have modified the de Nora '887 reference in view of the de Nora '304 reference, the de Nora '340 reference and the Julstrup reference in such a manner as to result in or otherwise render obvious the present invention of independent claims 63 and 68.

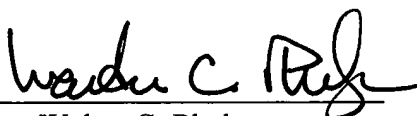
Therefore, it is respectfully submitted that independent claims 63 and 68, as well as claims 64-67, 69-81, 83-91 and 93 which depend therefrom, are clearly allowable over the prior art of record.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice to that effect is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

Odd-Arne LORENTSEN et al.

By: 

Walter C. Pledger
Registration No. 55,540
Attorney for Applicants

WCP/lkd
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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